

RD5000™ WL



User Guide



Radiodetection®
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Preface

About this guide

This guide provides basic operating instructions for the RD5000™ locator and transmitter. It also contains important safety information and guidelines and as such should be read in its entirety before attempting to operate the RD5000 locator and transmitter.

It is also highly recommended to register the RD5000 locator and transmitter for the free 3 year extended warranty.

Extended Warranty

Thank you for purchasing the RD5000™ locator and transmitter.

RD5000 locators and transmitters are covered by a 1 year warranty. It is highly recommended to register the RD5000 locator and transmitter for the free 3 year extended warranty.

Registration and extended warranty are free and once registered users will be entitled to free software updates.

To be eligible, customers must register each product within 3 months of purchase.

Upon registration customers will receive confirmation of registration by email and this email will include a download key, this key will be required for software updates to your RD5000 locator and transmitter.

When new software is released, registered users will receive a notification email that links to the new software download page on the Radiodetection website. After 12 months from purchase, the registered user will be notified and offered the chance to validate the calibration of the RD5000 locator using eCAL.

To register for extended warranty go to:

www.radiodetection.com/extendedwarranty

eCAL™

The RD5000 has been designed so that it does not require regular calibration. However, as with all safety equipment, it is recommended that a service should be carried out at least once a year either at Radiodetection's service centre or an approved Radiodetection service centre. Alternatively eCAL™ may be used to validate the calibration of the RD5000 locator.

eCAL is a novel Radiodetection technique that allows the user to validate the original factory calibration of the RD5000 locator, providing the user with the confidence that the locator continues to meet its original factory calibration.

eCAL also carries out a functional test on the locator providing the user with the confidence that the locator continues to provide the same performance as it did when it first left the factory. eCAL can be carried out on site without the need to return the locator to a service centre, saving time and expense. Each time the locator passes eCAL, the user can view or print a dated eCAL validation certificate.

For a more detailed explanation of eCAL, please go to the eCAL section on page 12.

Locator features

1. LCD.
2. Keypad.
3. Battery compartment (USB connector inside)

Note: The RD5000 is supplied with a rechargeable battery pack. It is possible to use alkaline or NiMh batteries by purchasing the optional battery compartment from Radiodetection.

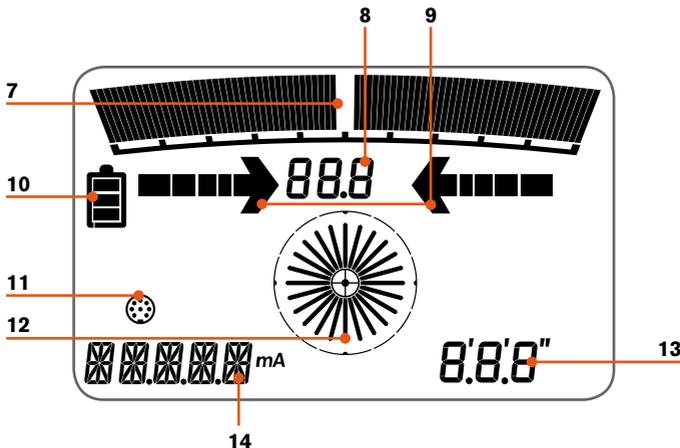
4. Accessory socket.
5. Headphone jack.

Locator keypad

6. Power key: Switches the unit on and off. Toggles between Guidance Mode and Signal Strength Mode.

Locator display icons

7. Target position indicator: Indicates position of locator relative to target line.
8. Signal strength: Numerical indication of signal strength.
9. (Proportional) Left/Right arrows: Indicates the location of the target relative to the locator.
10. Battery icon: Indicates the battery level.
11. Accessory indicator: Indicates when an accessory is connected.
12. Compass: Displays the direction of the cable or pipe relative to the locator.
13. Depth: Indication of depth reading.
14. Current: Indication of signal current reading.



RD5000WLT transmitter



Transmitter front panel

1. On/Off key.
2. On/Off LED.
3. Alkaline battery warning LED: Flashes when batteries are low.
4. Lithium Ion rechargeable battery warning LED: Flashes when batteries are low.
5. Accessory socket for direct connection lead, signal clamp and charging internal Lithium Ion rechargeable battery pack.

Transmitter rear panel

6. Fuse holder.

Note: The transmitter is supplied with a fuse and before use this will have to be inserted into the fuse holder.

7. Alkaline battery compartment: Requires 4 off D-Cell.

The RD5000 transmitter incorporates a rechargeable lithium ion battery pack and this is the intended primary power source for the transmitter. When the Lithium ion low battery level LED illuminates the user should either recharge the battery pack using the Radiodetection supplied charger or alternatively fit 4 off alkaline batteries. If alkaline batteries are fitted to the transmitter, these will be detected automatically and the transmitter will take its power from the alkaline batteries. When the alkaline batteries are low the alkaline low battery level LED will illuminate.

Locating pipes and cables with the RD5000

Applying the signal using direct connection

In direct connection, you connect the transmitter output directly to the pipe or to the conductor of the cable you wish to survey. The transmitter will then apply an active frequency signal, which you can locate using the locator. This is the preferred method for providing the strongest signal on a particular line and is particularly useful for long distance tracing.

Connecting the transmitter to a pipe or cable in direct connect mode, requires the use of a direct connection lead, which is connected to the accessory socket of the transmitter. The red lead is connected to the pipe or cable and the black lead connected to an earth stake to complete the electrical circuit.

 **WARNING! Direct connection to live wires is POTENTIALLY LETHAL. Direct connections should be attempted by fully qualified personnel only!**

Applying the signal using induction

When it is not possible to use the transmitter in direct connection mode, the transmitter can be placed on the ground over or near the survey area with the arrow on the transmitter in line with the target line. The transmitter will then induce the signal indiscriminately to any nearby buried metallic conductors. When using the transmitter in induction mode it should be noted that the signal from the transmitter will transmit not only below the transmitter but above the transmitter and it is recommended that the locator should not be used within a minimum of 15 meters (50 feet) from the transmitter.

Applying the signal using a transmitter signal clamp

When it is not possible to use either direct connection or induction methods, a transmitter signal clamp, can be used to induce the signal onto the target line. Connect the clamp to the accessory socket of the transmitter and fit the clamp around the target line. The clamp is particularly useful with insulated live cables as this removes the need to disable the power and break into the line.

Using accessories with the RD5000

At times, it may not be possible to use a locator to locate or identify a particular target line due to inaccessibility. In these situations a stethoscope antenna or locator signal clamp may be used to locate or identify individual target lines.

Radiodetection supplies a range of stethoscopes and locator signal clamps to suit most applications and for more detailed information on accessories, please see the RD5000 operation manual or go to www.radiodetection.com.

Applicable RD4000/RD7000/RD8000 accessories are compatible with the RD5000 locator and transmitter.

Getting started with the RD5000

To power on or power off the locator and transmitter, press and hold the On/Off key for 2 seconds.

1. Switch on the locator using the On/Off key. During start up, the locator will display the unit model, date of last factory calibration (or eCAL) and software version.
2. Once powered,, the locator will automatically default to Guidance Mode and in this mode the following features will be displayed on the screen:
 - Target Position Indicator.
 - Compass.
 - Numerical signal strength.
 - Proportional left/right arrows.
 - Depth.
 - Current.
 - Battery level indicator for 10 seconds after a key press.
3. A momentary press of the On/Off key will change the operating mode to Signal Strength Mode. In this mode the following features will be displayed:
 - Compass.
 - Numerical signal strength.
 - Depth.
 - Current.
 - Battery level indicator for 10 seconds after a key press.

Locating the Pipe or cable

Having chosen the method of applying the transmitter signal to the pipe or cable, the locator is now ready to use.

Note: When the locator is positioned at a specific distance from the target line, the depth and current values will automatically display, although these values will not be accurate until the locator is directly over the target line and correctly orientated.

When directly over the target line, both depth and current readings will be at their minimum. This can be a very useful feature when attempting to pinpoint the target line.

Note: To display depth and current readings, the locator must be orientated in line with the target by using the compass. The compass feature in Figure One shows the locator directly in line with the target.

Figure One



Figure one shows the locator in Guidance Mode with the locator positioned to the left of the target line. In this position the Proportional Left arrow is displayed, indicating the direction in which the locator should be moved towards the target line. The target position indicator indicates the target positioned to the right of the locator and

can be used to guide the locator towards the target line. The signal strength value will be displayed, indicating the strength of the signal from the target line. In this position the tone from the speaker of the locator will be continuous.

With the aid of the compass, the locator can be positioned in line with the target line enabling both depth and current readings to be displayed.

As the locator is moved towards the right, the tail on the proportional left arrow will reduce, the target position indicator will move from the right, towards the centre, the speaker tone will reduce and the numerical signal strength value will increase.

Use the proportional arrows, target position indicator and signal strength value to guide the locator directly over the target line.

Figure Two:

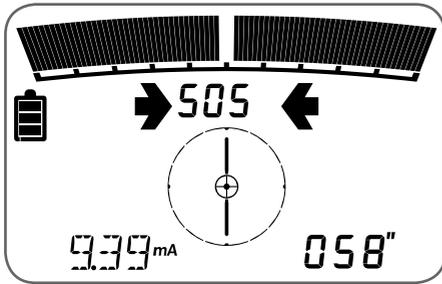


Figure two shows the locator in Guidance Mode and directly over the target line. In this position the left and right arrow heads will be displayed simultaneously, target position indicator in the centre, the signal strength value at its maximum, speaker tone silent and both depth and current readings at their minimum.

Figure Three:

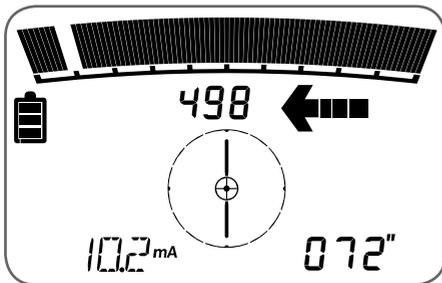


Figure three shows the locator in Guidance Mode and positioned to the right of the target line. In this position the Proportional Right arrow is displayed, indicating the direction in which the locator should be moved towards the target line. The target position indicator indicates the target positioned to the left of the locator and can be used to

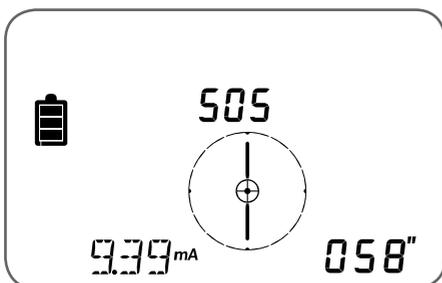
guide the locator towards the target line. The signal strength value will be displayed, indicating the strength of the signal from the target line. In this position the tone from the speaker of the locator will be pulsed.

With the aid of the compass, the locator can be positioned in line with the target line enabling both depth and current readings to be displayed.

As the locator is moved towards the left, the tail on the proportional right arrow will reduce, the target position indicator will move from the left, towards the centre, the pulsing tone from the speaker will reduce and the numerical signal strength value will increase.

Use the proportional arrows, target position indicator and signal strength value to guide the locator directly over the target line.

Figure Four:



With the locator powered up, a momentary press of the On/Off key will change the mode of operation to Signal Strength Mode. In this mode, the compass, signal strength, depth and current will be available. The proportional left/right arrows and target position indicator will not be available. See figure four.

Centros Manager™

Centros Manager™ is a Radiodetection PC application which is available as a free download. From time to time Radiodetection will release new software for the RD5000 locator which may improve performance, stability and may include new features. The latest software is contained within Centros Manager and to download the latest software you must register for extended warranty (see page 1 for details). Once registered you will receive an email when new versions of software are available and you may also carry out an eCAL to validate the calibration and functionally test the RD5000 locator.

Installing Centros Manager

Note: Before downloading the Centros Manager application, you may find it useful to view the Centros Manager operation Manual by going to: www.radiodetection.com/centrosmanager. Please note that when you download Centros Manager the operation manual will be available to view in the Help menu.

Note: When you install Centros Manager onto a PC, the following message may be displayed: “You need to log in as Administrator”. If this message is displayed, the installation of the program will not complete. You will need to log on as an Administrator or ask a user with Administration Rights to install the program on your behalf. Having successfully installed Centros Manager, the Administrator will need to carry out the instructions in Section 7.1 of the Centros Manager Operation Manual if they wish users without Administrator Rights to use Centros Manager.

1. Go to www.radiodetection.com/centrosmanager.
2. Click on the link to download Centros Manager and a File Download Window will appear. You will have a choice of either Run or Save.

Run: Centros Manager will automatically install.

Save: You will be given the option to save Centros Manager to a destination of your choice. Once you select the destination, the Centros Manager executable program will download to that destination. Once completed, you will have the option to Run or Open Folder. At this stage Centros Manager has not been installed so you can either select Run and Centros Manager will automatically install or you can choose to Open Folder. When you open the folder the Centros Manager executable file will be available. To install double click on this file.

3. When Centros Manager is installed run from the Windows Start menu under Programs or alternatively, use the Centros Manager shortcut on your desk top if you have opted to have this during installation of Centros Manager.

Note: Once Centros Manager is open, click on Help to gain access to the Centros Manager Operation Manual.

Each time you use a locator you want to be confident that the equipment you are using continues to perform to the same standard as it did when it first left the factory. eCAL™ provides users with the following features which can be accessed and carried out on site, without the need to return the locator to a service centre.

- Checking the validation of the RD5000 with the original stored factory calibration results.
- Carrying out a functional check.
- Retrieving original factory calibration certificate or previous eCAL validation certificates.

To validate your RD5000, you must carry out the following:

1. Register your RD5000 locator at www.radiodetection.com/extendedwarranty. See page 3 for more details.
2. Purchase an eCAL key at www.radiodetection.com/ecal or alternatively contact your local Radiodetection representative.
3. Download Centros Manager at www.radiodetection.com/centrosmanager. See page 11 for details.

Using eCAL to validate the RD5000

1. Connect the RD5000 via the USB connector inside the battery compartment to a suitable USB port on a PC or laptop.
2. Switch on the RD5000 (no segments will be lit but the backlight will be on).
3. Open Centros Manager and click on Locator eCAL Validation.
4. Copy the eCAL key (received in your confirmation email when purchasing the eCAL key). Click on Load Validation Key icon and paste the eCAL key.
5. Click on Run eCAL Validation. The progress of the eCAL will be displayed in the message box. Please follow the instructions.
6. In less than 3 minutes the eCAL Validation Status will be displayed, click on OK. To view or print the certificate, locate the serial number of the RD5000 within the Unit Manager window and expand the contents. Expand eCAL validations and double click on the date the eCAL was carried out to display the certificate of validation.
7. Once an eCAL has been carried out the validation certificate may be viewed or printed at any time, without the need to load an eCAL validation key.
8. After a successful eCAL, the unit will display the eCAL date in the format, month/year when next switched on.

Using eCAL to retrieve the original factory calibration certificate

The original factory calibration results for the RD5000 locator can be retrieved from the unit without the need to purchase an eCAL key. Each time the RD5000 is calibrated either at Radiodetection service centre or an approved Radiodetection service centre, the calibration results are stored within the locator. To retrieve the results and print a certificate, carry out the following:

Note: You do not need to purchase an eCAL validation key to retrieve the original factory calibration certificate.

1. Register your RD5000 locator by going to:
www.radiodetection.com/extendedwarranty. See page 3 for more details.
2. Download Centros Manager by going to:
www.radiodetection.com/centrosmanager. See page 11 for details.
3. Connect the RD5000 via the USB connector inside the battery compartment to a suitable USB port on a PC or laptop.
4. Switch on the RD5000 (no segments will be lit but the backlight will be on).
5. Open Centros Manager and click on **Locator eCAL Validation**.
6. Click on **Get Original Calibration Data**. The progress will be displayed in the message box. Please follow the instructions.
7. In less than 3 minutes the original calibration certificate will be available to view or print, locate the serial number of the RD5000 within the Unit Manager window and expand the contents. Expand Factory Calibrations and click on the latest date as this will be the date when the unit was last factory calibrated. Double click on the date and the certificate of calibration will be displayed and you can choose to view or print this certificate.

Important notices

When reporting any problems to your Radiodetection Dealer or Supplier it is important to quote the unit serial number and the purchase date.

⚠ WARNING! This equipment is NOT approved for use in areas where hazardous gases may be present.

⚠ WARNING! When using the transmitter, switch off the unit and disconnect cables before removing the battery pack.

Batteries should be disposed of in accordance with your company's work practice, and/or any relevant laws or guidelines in your country.

This instrument, or family of instruments, will not be permanently damaged by reasonable electrostatic discharge and has been tested in accordance with IEC 801-2. However, in extreme cases temporary malfunction may occur. If this happens, switch off, wait and switch on again. If the instrument still malfunctions, disconnect the batteries for five seconds and then reinstall and switch the unit on.

⚠ WARNING! The RD5000 will detect almost all buried conductors but there are some objects that do not radiate any detectable signal. The RD5000, or any other electromagnetic locator, cannot detect these objects so proceed with caution. The RD5000 does not indicate whether a signal is from a single cable or from several in close proximity.

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Trademarks

RD5000, RD7000, RD7000+, RD8000, RD4000, flexitrax, SurveyCERT, StrikeAlert, SideStep and eCAL are trademarks of Radiodetection Ltd.

FCC and Industry Canada statements

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. To comply with the FCC RD explore compliance requirements, this device and its antenna must not be co-located or operated in conjunction with any other antenna or transmitter.

Training

Radiodetection provides training services for most Radiodetection products. Our qualified instructors will train equipment operators or other personnel at your preferred location or at Radiodetection headquarters. For more information go to: www.radiodetection.com or contact your local Radiodetection representative.

Service and Maintenance

When reporting any problems to your Radiodetection Dealer or Supplier it is important to quote the unit serial number and the purchase date.

The locator and transmitter are designed so that they do not require regular calibration. However, as with all safety equipment, it is recommended that they are serviced at least once a year either at Radiodetection or an approved repair center.

Radiodetection products, including this user guide, are under continuous development and are subject to change without notice. Go to: www.radiodetection.com or contact your local Radiodetection representative for the latest information regarding the RD5000 or any Radiodetection product.

Warranty

Subject to the conditions set out herein, Radiodetection Limited expressly and exclusively provides the following warranty to original end user buyers of Radiodetection products. Radiodetection products include Radiodetection, Pearpoint, Telespec, Bicotest, Riser Bond, Dielectric, Mark Products and Warren G-V brands. Radiodetection hereby warrants that its products shall be free from defects in material and workmanship for one year starting from point of sale to end customer. Extensions of this warranty period are available where the same terms and conditions apply.

Product families include:

- Cable & Pipeline Location
- Trenchless
- Water Leak Detectors
- Pipeline Integrity
- Pipeline Video Inspection
- Ground Penetrating Radar
- Cable Test
- Cable Dryers

To register for an extended warranty (3 years) go to:

www.radiodetection.com/extendedwarranty.

Statement of warranty conditions

The sole and exclusive warranty for any Radiodetection product found to be defective is repair or replacement of the defective product at Radiodetection's sole discretion. Repaired parts or replacement products will be provided by Radiodetection on an exchange basis and will be either new or refurbished to be functionally equivalent to new.

In the event this exclusive remedy is deemed to have failed of its essential purpose, Radiodetection's liability shall not exceed the purchase price of the Radiodetection product. In no event will Radiodetection be liable for any direct, indirect, special, incidental, consequential or punitive damages (including lost profit) whether based on warranty, contract, tort or any other legal theory.

Warranty services will be provided only with the original invoice or sales receipt (indicating the date of purchase, model name and dealer's name) within the warranty period. This warranty covers only the hardware components of the Radiodetection product. Data storage media or accessories must be removed prior to submission of the product for warranty service.

Radiodetection will not be responsible for loss or erasure of data storage media or accessories. Radiodetection is not responsible for transportation costs and risks associated with transportation of the product. The existence of a defect shall be determined by Radiodetection in accordance with procedures established by Radiodetection.

This warranty is in lieu of any other warranty, express or implied, including any implied warranty of merchantability or fitness for a particular purpose.

This warranty does not cover:

- a. Periodic maintenance and repair or parts replacement due to wear and tear.
- b. Consumables (components that are expected to require periodic replacement during the lifetime of a product such as non rechargeable batteries, bulbs, etc.).
- c. Damage or defects caused by use, operation or treatment of the product inconsistent with its intended use.
- d. Damage or changes to the product as a result of:
 - i. Misuse, including: - treatment resulting in physical, cosmetic or surface damage or changes to the product or damage to liquid crystal displays.
 - ii. Failure to install or use the product for its normal purpose or in accordance with Radiodetection instructions on installation or use.
 - iii. Failure to maintain the product in accordance with Radiodetection instructions on proper maintenance.
 - iv. Installation or use of the product in a manner inconsistent with the technical or safety laws or standards in the country where it is installed or used.
 - v. Virus infections or use of the product with software not provided with the product or incorrectly installed software.
 - vi. The condition of or defects in systems with which the product is used or incorporated except other 'Radiodetection products' designed to be used with the product.
 - vii. Use of the product with accessories, peripheral equipment and other products of a type, condition and standard other than prescribed by Radiodetection.
 - viii. Repair or attempted repair by persons who are not Radiodetection warranted and certified repair houses.
 - ix. Adjustments or adaptations without Radiodetection's prior written consent, including:
 - i. upgrading the product beyond specifications or features described in the instruction manual, or
 - ii. modifications to the product to conform it to national or local technical or safety standards in countries other than those for which the product was specifically designed and manufactured.
 - x. Neglect e.g. opening of cases where there are no user replaceable parts.
 - xi. Accidents, fire, liquids, chemicals, other substances, flooding, vibrations, excessive heat, improper ventilation, power surges, excess or incorrect supply or input voltage, radiation, electrostatic discharges including lighting, other external forces and impacts.

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